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Slide Materials on Genetically Modified (GM) Crops

バイテク情報普及会
COUNCIL FOR BIOTECHNOLOGY INFORMATION JAPAN
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Contribution of Genetically Modified Crops（1）

Yield increase

Allows for stabilization of yield and secondary cropping, leading to **20% or more yield increase** compared to non-GM crops[1]

Decrease in pesticide use

37% reduction in annual pesticide use due to reduced number of insecticide and herbicide applications[2]

Less environmental impact

The environmental impact has decreased by 17.3% due to, for example, pesticides used for genetically modified crops have less environmental impact than conventional pesticides as well as the reduction in pesticide use[2]

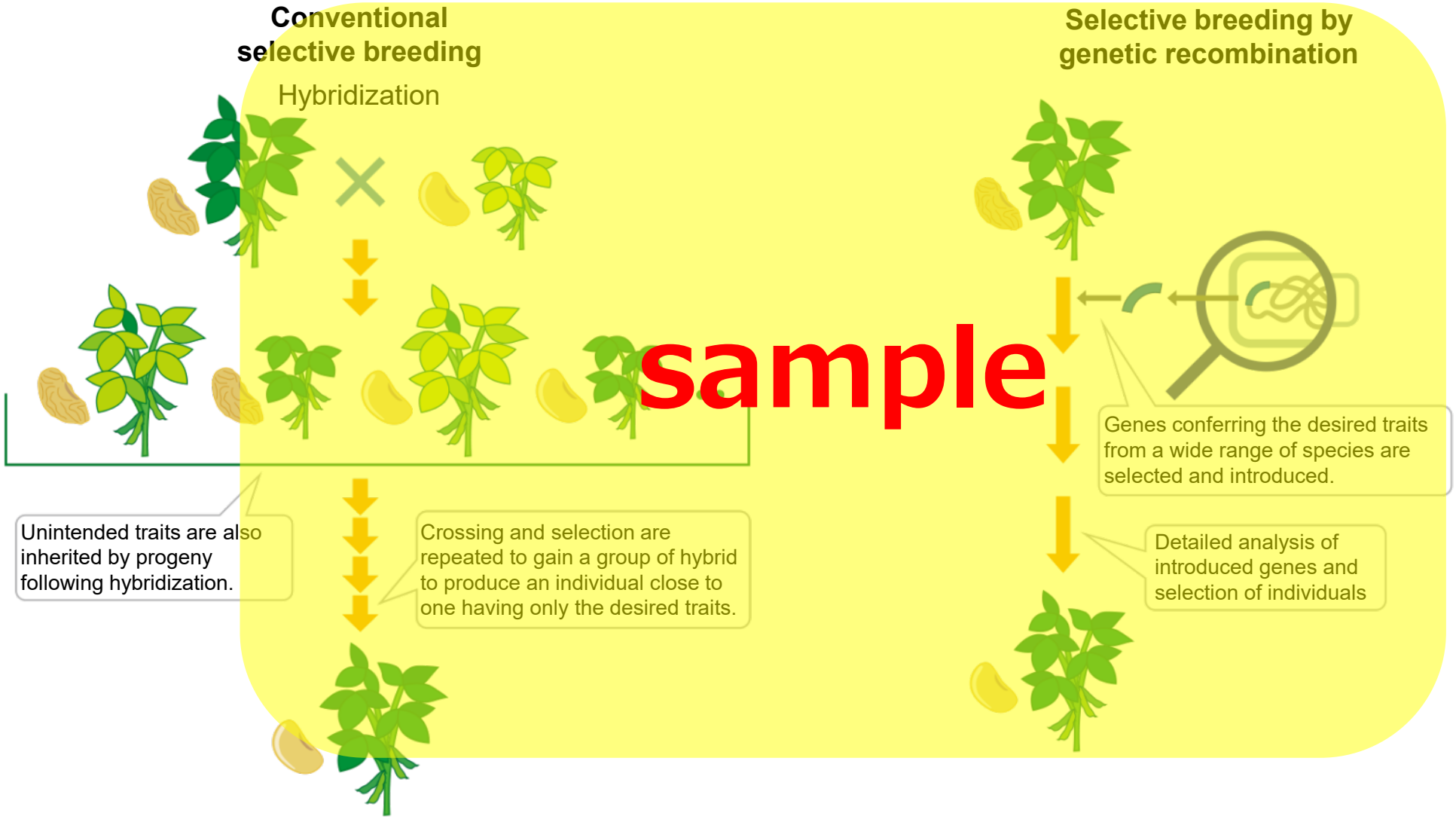
Improved profitability

In addition to higher yields, farmers' **profits increased by an average of 68%** due to lower costs resulting from reduced amount and frequency of pesticide applications[1]

1. Klümper W, Qaim M (2014) A Meta-Analysis of the Impacts of Genetically Modified Crops. PLoS ONE 9(11).
2. Graham Brookes (2022) Genetically Modified (GM) Crop Use 1996–2020: Environmental Impacts Associated with Pesticide Use Change, DOI:10.1080/21645698.2022.2118497

Differences Between Conventional and Genetic Recombination Breeding

Genetic modification technologies are a more reliable and efficient means for selective breeding.

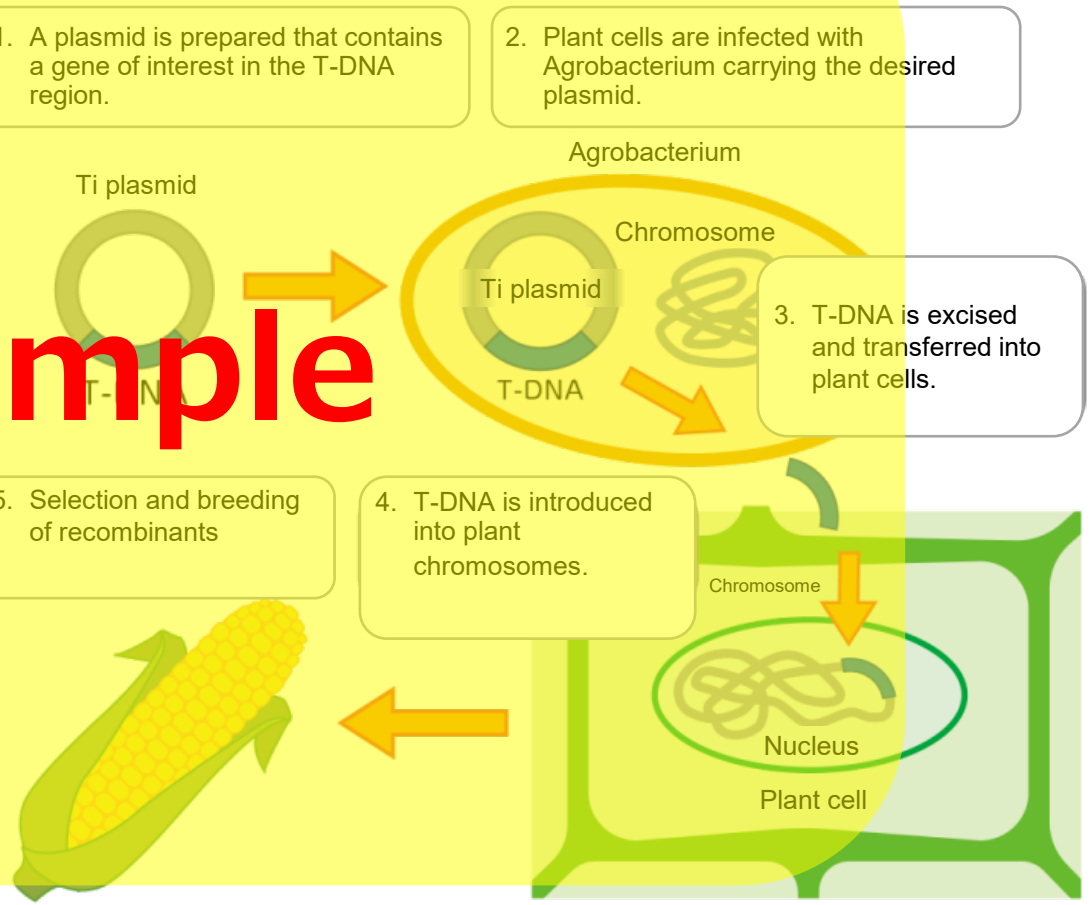


Methods for Producing Genetically Modified Crops (1)

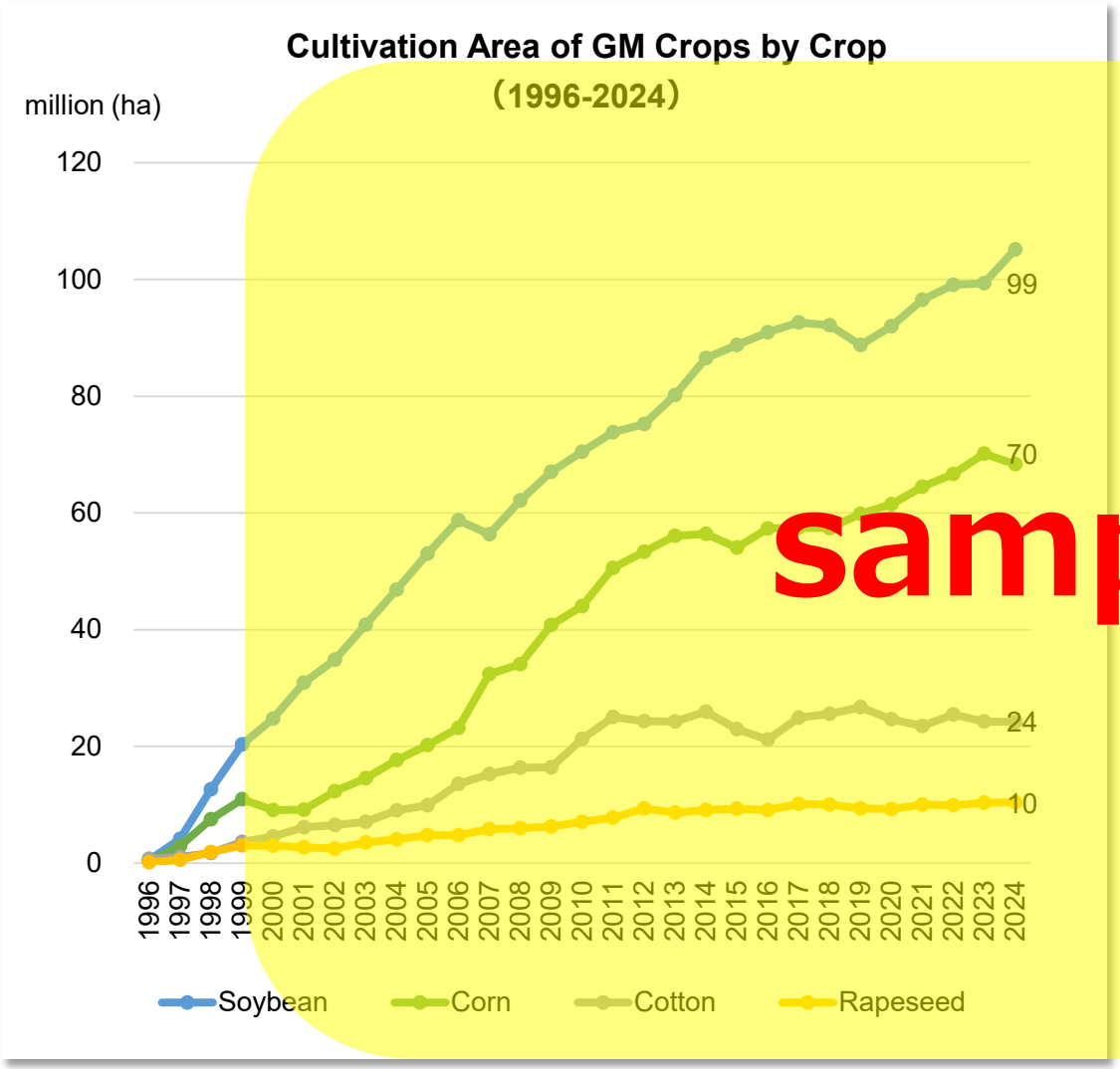
GM crops are primarily created using the following methods:

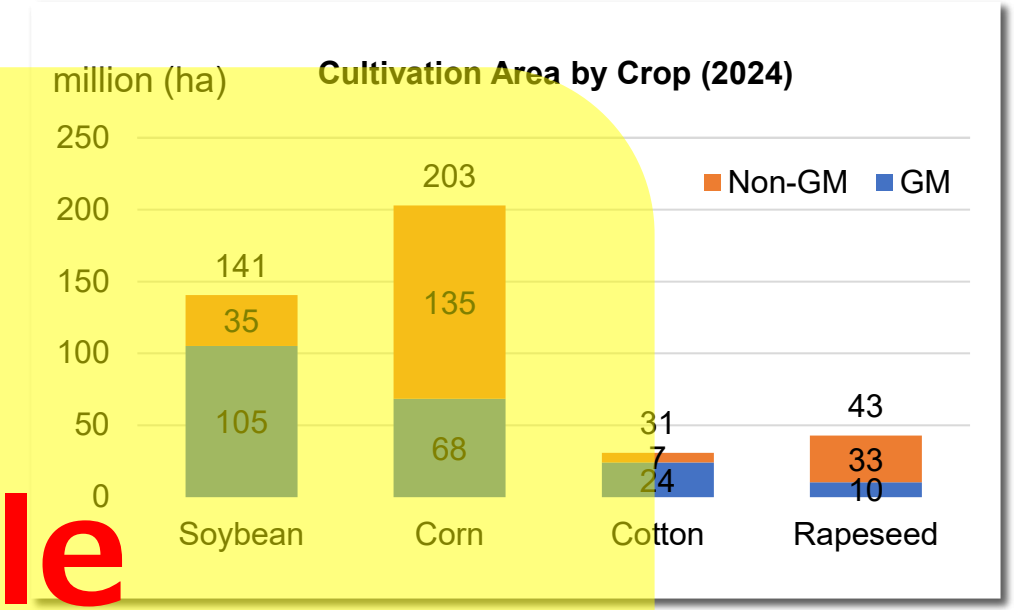
- **Agrobacterium method**

  Agrobacterium, a soil bacterium, has the property of infecting some plants and inserting a DNA region called T-DNA from a plasmid of its own into the plant genome. The Agrobacterium method incorporates a gene of interest together with T-DNA into the plant genome by using this property.



Global Usage Status (2)
Cultivation Status of Genetically Modified Crops by Crop (2024)





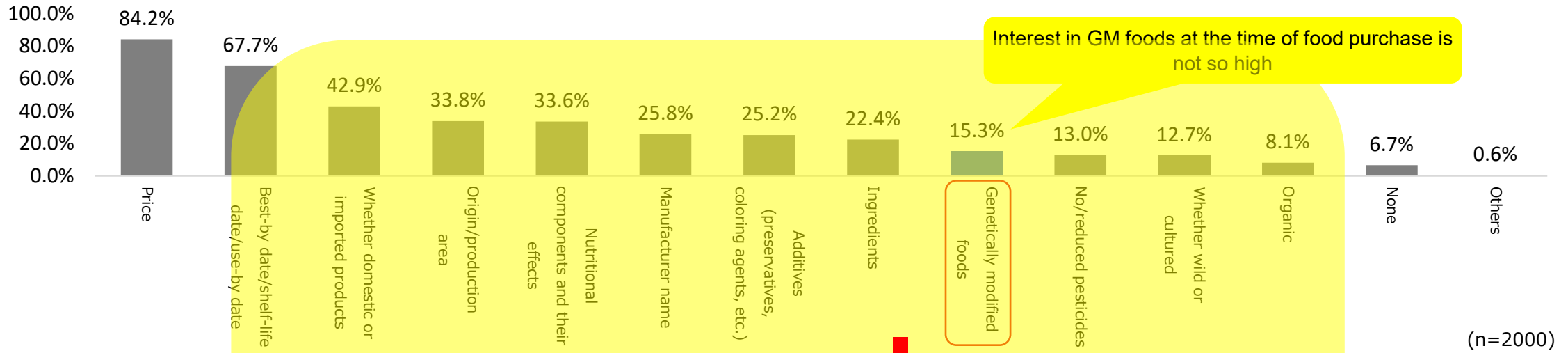
Percentage of cultivated GM crops (%, 2024)

	Soybean	Corn	Cotton	Rapeseed
Worldwide	**75**	**34**	**78**	**24**
United States	96	94	96	96
Brazil	99	96	100	0
Argentina	99	99	100	0
Canada	81	89	0	95
Australia	0	0	99	27

Summarized by the Council for Biotechnology Information Japan based on AgbioInvestor GM monitor 「GM and Approval Data(All Data 2025 V4.1.xlsx)」

Consumer Awareness Survey Conducted by the Council for Biotechnology Information Japan (1)

What have you recently been interested in when purchasing food items? (multiple answers allowed)



Interest in GM foods at the time of food purchase is not so high

In addition, please choose what you are most interested in (one item)

1.1% of respondents chose GM foods as the most interesting characteristic.

Source : The Council for Biotechnology Information Japan（2021）Consumer Awareness Survey toward genetically modified/genome-edited foods (total of 2,000 men and women in their 20s to 50s) https://cbijapan.com/document/4453/